

REMARKS

This reply is in response to the Official Action mailed December 3, 2003.

In that Official Action, the Examiner rejected applicants' claims 1 and 2 under 35 USC § 102(b). The Examiner cited U.S. Patent No. 6,054,355 to Inumiya (Inumiya hereinafter) as the basis for the rejection.

As noted by applicants, one of the problems with prior art sacrificial gates was the fact that the sacrificial gate itself defines the distance between the source and the drain. This problem is observed in FIG. 9E of Inumiya. In Inumiya, the spacer is formed over the sacrificial gate 108. Both the sacrificial gate 108 and the spacers 111 are formed in a wide groove bounded by isolation film 107. This wide groove bounds the source and drain of the device in addition to the gate, spacers and device channel. As such there is no question that the wide groove bounded by the isolation film 107 is not a trench that defines the distance between the source and the drain, as required by applicants' claim 1.

The Examiner states that the groove 114 in FIG. 9E of Inumiya et al. is the trench that defines the distance between the source and the drain. However, there is a significant structural distinction between the Inumiya et al. structure and the structure recited in applicants' claim 1. Specifically, in applicant's claim 1, both the spacers and the gate are formed in the trench. This is not so in the device depicted in Inumiya et al. in which the trench width is the same width as the sacrificial gate. In applicants' device, the combined width of the spacers and the gate defines the distance between the source and drain. This is clearly not so in Inumiya et al. In Inumiya et al., the spacers are not located over the channel 115, but over the source and drain regions. Thus, Inumiya et al. clearly does not disclose a device in which, "the gate and spacers are formed in a trench formed

in a layer of dielectric material formed on the substrate surface *and* wherein the trench defines the distance between the device source and the device drain” (emphasis added). Inumiya et al. does not disclose or suggest forming the spacers in the trench. Thus, the advantages of applicants’ invention is not achieved by Inumiya et al. In applicants’ invention, the advantage is in forming the larger feature, the trench, lithographically. The smaller feature, the gate is NOT defined lithographically. Thus, in applicants’ invention, the dimension of the dummy gate is larger than the dimension of the replacement gate. In Inumiya et al. the gate is defined lithographically, since the dimension of the sacrificial or dummy gate is the same as the dimension of the replacement gate. Thus, applicants’ claim 1, which requires that the trench define both 1) the distance between the source and the drain and 2) the combined width of the gate and spacers, is neither anticipated by nor obvious from Inumiya et al.

The Examiner rejected claim 3 as obvious from Inumiya et al. in view of US Patent No. 5,985,726 to Yu et al. (Yu et al. hereinafter). Claim 3 depends from claim 1, which is patentable over Inumiya et al. for the above-described reasons. Applicants’ claim 3 is therefore patentable by virtue of its dependence from claim 1. Specifically, in Yu et al., the trench does not define the distance between the source and the drain. The spacer openings 32 are situated over the source and drain extensions 23 and 25. Thus, Yu et al. does not describe a device in which the trench both 1) defines the distance between the source and the drain and 2) defines the combined width of the gate and spacers.

For the foregoing reasons, applicants submit that currently pending claims 1-3 are in condition for allowance. Favorable action from the Examiner is respectfully requested.

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Respectfully submitted,

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